

IN THE CLAIMS

1. (Original) A wrapping machine stretch head for use in connection with the packaging of a load within wrapping film, comprising:

a substantially vertically oriented downright;

a base plate inclined with respect to a substantially horizontal plane such that a first end of said base plate is disposed at a higher elevation than a second end of said base plate;

a supply roll of wrapping film rotatably mounted upon said first end of said base plate;

a carriage assembly, upon which said base plate is fixedly mounted, vertically movable upon said substantially vertically oriented downright between raised and lowered positions so as to enable wrapping film to be wrapped around the load throughout the vertical extent of the load;

a first tension roller having first and second ends defining a longitudinal roller axis therebetween, and wherein said first end of said first tension roller is rotatably mounted upon said base plate;

a second tension roller having first and second ends defining a longitudinal roller axis therebetween, said first end of said second tension roller is rotatably mounted upon said base plate, and wherein said second tension roller is adapted to operatively cooperate with said first tension roller so as to define with said first tension roller a space therebetween through which a portion of said wrapping film, when withdrawn from said supply roll of wrapping film, can pass whereby a predetermined amount of tension is developed within said wrapping film when said wrapping film is withdrawn from said supply roll of wrapping film and routed around said first and second tension rollers so as to be conveyed in a predetermined direction toward the load to be wrapped;

motor drive means operatively connected to first and second tension rollers for rotatably driving said first and second tension rollers;

a strain gauge roller mounted upon said second end of said base plate for sensing said amount of tension developed within said wrapping film and for controlling said motor drive means in accordance with said sensed amount of tension;

a first idler roller mounted upon said second end

of said base plate and disposed downstream from said strain gauge roller, as considered in said predetermined direction of conveyance of said wrapping film from said supply roll of wrapping film to the load; and

a second idler roller mounted upon said second end of said base plate and disposed downstream from said first idler roller, as considered in said predetermined direction of conveyance of said wrapping film from said supply roll of wrapping film to the load, so as to be disposed at the lowest elevational level upon said carriage assembly, due to said inclination of said base plate with respect to said horizontal plane, such that when said wrapping film is conveyed from said second idler roller to the load during a load wrapping operation, said wrapping film will be able to be applied to the lowermost elevational levels of the wrapped load.

2. (Original) The wrapping machine stretch head as set forth in Claim 1, wherein:

said first idler roller is disposed at a predetermined position adjacent to said strain gauge roller such that

the outfeed flow path of said wrapping film from said strain gauge roller toward said first idler roller is sub-stantially disposed at a predetermined angle of 90° with re-spect to the infeed flow path of said wrapping film from said second tension roller toward said strain gauge roller so as to permit said strain gauge roller to accurately sense said tension developed within said wrapping film.

3. (Original) The wrapping machine stretch head as set forth in Claim 1, wherein said motor drive means comprises:

a motor;

a plurality of sprocket wheels wherein one of said plurality of sprocket wheels is operatively connected to said motor so as to be driven thereby; and

a sprocket wheel chain operatively interconnecting other ones of said plurality of sprocket wheels to said one of said sprocket wheels such that said other ones of said plurality of sprocket wheels can be driven by said one of said plurality of sprocket wheels and said sprocket wheel chain.

4. (Original) The wrapping machine stretch head as set forth in Claim 1, wherein:

said space, defined between said first and second tension rollers and through which said portion of said wrapping film passes, withdrawn from said supply roll of wrapping film and being conveyed toward the wrapped load, is disposed within a first vertical plane;

first securing means, extending only substantially within a second plane which is substantially parallel to said first plane within which said space, defined between said first and second tension rollers, is disposed, is provided for rotatably securing said second end of said first tension roller; and

second securing means, extending only substantially within a third plane which is substantially parallel to said first plane within which said space, defined between said first and second tension rollers, is disposed, and which is also substantially parallel to said second plane within which said first securing means is disposed, is provided for rotatably securing said second end of said second tension roller and for cooperating with said first securing means in defining a channel, between said first and second securing means, which is open upon opposite sides of said space

defined between said first and second tension rollers such that an axially open space is defined between said second ends of said first and second tension rollers and between said first and second securing means so as to permit said wrapping film, withdrawn from said supply roll of wrapping film, to be inserted into said channel defined between said first and second securing means, and into said space defined between said first and second tension rollers, in an axial direction which is substantially parallel to said longitudinal axes of said first and second tension rollers, which is substantially parallel to said second and third planes, and which extends from an axial position commencing beyond said second ends of said first and second tension rollers, through said space defined between said first and second tension rollers, and toward said first ends of said first and second tension rollers rotatably mounted upon said base plate.

5. (Original) A wrapping machine stretch head for use in connection with the packaging of a load within wrapping film, comprising:

a substantially vertically oriented downright;
a base plate inclined with respect to a substantially horizontal plane such that a first end of said base plate is disposed at a higher elevation than a second end of said base plate;

a supply roll of wrapping film rotatably mounted upon said first end of said base plate;

a carriage assembly, upon which said base plate is fixedly mounted, vertically movable upon said substantially vertically oriented downright between raised and lowered positions so as to enable wrapping film to be wrapped around the load throughout the vertical extent of the load;

a first tension roller having first and second ends defining a longitudinal roller axis therebetween, and wherein said first end of said first tension roller is rotatably mounted upon said base plate;

a second tension roller having first and second ends defining a longitudinal roller axis therebetween, said first end of said second tension roller is rotatably mounted upon said base plate, and wherein said second tension roller is adapted to operatively cooperate with said first tension roller so as to define with said first tension roller a space therebetween through which a portion of said wrapping film,

when withdrawn from said supply roll of wrapping film, can pass whereby a predetermined amount of tension is developed within said wrapping film when said wrapping film is withdrawn from said supply roll of wrapping film and routed around said first and second tension rollers so as to be conveyed in a predetermined direction toward the load to be wrapped;

motor drive means operatively connected to first and second tension rollers for rotatably driving said first and second tension rollers;

a strain gauge roller mounted upon said second end of said base plate for sensing said amount of tension developed within said wrapping film and for controlling said motor drive means in accordance with said sensed amount of tension;

a first idler roller rotatably mounted upon said second end of said base plate and disposed downstream from said strain gauge roller, as considered in said predetermined direction of conveyance of said wrapping film from said supply roll of wrapping film to the load; and

a second idler roller rotatably mounted upon said second end of said base plate and disposed downstream from said first idler roller, as considered in said predetermined

direction of conveyance of said wrapping film from said supply roll of wrapping film to the load, so as to be disposed at the lowest elevational level upon said carriage assembly, due to said inclination of said base plate with respect to said horizontal plane, such that when said wrapping film is conveyed from said second idler roller to the load during a load wrapping operation, said wrapping film will be able to be applied to the lowermost elevational levels of the wrapped load;

said second idler roller having a sleeve member, disposed around an external peripheral portion thereof, for effectively causing said wrapping film to adhere thereto in such a manner that while relative conveyance of said wrapping film, from said supply roll of wrapping film toward the load is permitted, transverse movement along said second idler roller in a direction parallel to the longitudinal rotational axis of said second idler roller is effectively prevented so as to prevent said wrapping film from undergoing any slippage with respect to said second idler roller.

6. (Original) The wrapping machine stretch head as set forth

in Claim 5, wherein:

said sleeve member is fabricated from a rubberized material.

7. (Original) The wrapping machine stretch head as set forth in Claim 5, wherein:

said sleeve member comprises a member selected from the group comprising a one-piece tubular sleeve structure, a flat sheet member formed into a tubular sleeve structure and subsequently secured in such state, and strip material formed into a tubular sleeve structure.

8. (Original) The wrapping machine stretch head as set forth in Claim 5, wherein:

said first idler roller is disposed at a predetermined position adjacent to said strain gauge roller such that the outfeed flow path of said wrapping film from said strain gauge roller toward said first idler roller is substantially disposed at a predetermined angle of 90° with respect to the

infeed flow path of said wrapping film from said second tension roller toward said strain gauge roller so as to permit said strain gauge roller to accurately sense said tension developed within said wrapping film.

9. (Original) The wrapping machine stretch head as set forth in Claim 5, wherein said motor drive means comprises:

a motor;

a plurality of sprocket wheels wherein one of said plurality of sprocket wheels is operatively connected to said motor so as to be driven thereby; and

a sprocket wheel chain operatively interconnecting other ones of said plurality of sprocket wheels to said one of said sprocket wheels such that said other ones of said plurality of sprocket wheels can be driven by said one of said plurality of sprocket wheels and said sprocket wheel chain.

10. (Original) The wrapping machine stretch head as set forth in Claim 5, wherein:

said space, defined between said first and second tension rollers and through which said portion of said wrapping film passes, withdrawn from said supply roll of wrapping film and being conveyed toward the wrapped load, is disposed within a first vertical plane;

first securing means, extending only substantially within a second plane which is substantially parallel to said first plane within which said space, defined between said first and second tension rollers, is disposed, is provided for rotatably securing said second end of said first tension roller; and

second securing means, extending only substantially within a third plane which is substantially parallel to said first plane within which said space, defined between said first and second tension rollers, is disposed, and which is also substantially parallel to said second plane within which said first securing means is disposed, is provided for rotatably securing said second end of said second tension roller and for cooperating with said first securing means in defining a channel, between said first and second securing means, which is open upon opposite sides of said space

defined between said first and second tension rollers such that an axially open space is defined between said second ends of said first and second tension rollers and between said first and second securing means so as to permit said wrapping film, withdrawn from said supply roll of wrapping film, to be inserted into said channel defined between said first and second securing means, and into said space defined between said first and second tension rollers, in an axial direction which is substantially parallel to said longitudinal axes of said first and second tension rollers, which is substantially parallel to said second and third planes, and which extends from an axial position commencing beyond said second ends of said first and second tension rollers, through said space defined between said first and second tension rollers, and toward said first ends of said first and second tension rollers rotatably mounted upon said base plate.